CLAIMS

1. A system (1) for applying opening devices (2) onto packages (3) of pourable food products, said system comprising a package conveyor (6) for feeding said packages along a predetermined path (P) and an application apparatus (13) for applying said opening devices onto said packages on said package conveyor, c h a r a c t e r i s e d in that said application apparatus comprises an optical detection unit (30) for detecting an application point on one of said packages (20) on said package conveyor and a pick and place unit (36) for receiving application information regarding said detected application point from said optical detection unit, picking one of said opening devices and placing it onto said one of said packages on said package conveyor by means of said application information.

2. A system (1) as claimed in claim 1, c h a r a c t e r i s e d in that said application point is defined by a prelaminated hole (21) on said one of said packages (20).

3. A system (1) as claimed in claims 1 or 2, c h a r a c t e r i s e d in that said optical detection unit (30) comprises a camera (32) for recording an image of said one of said packages (20), wherein said image contains said application point.

4. A system (1) as claimed in claim 3, c h a r a c t e r i s e d in that said optical detection unit (30) further comprises processing means (34) for producing said application information by comparing said image with a reference image containing a reference system, and obtaining a location of said application point with respect to said reference system.

5. A system (1) as claimed in claim 4, c h a r a c t e r i s e d in that said reference system includes an

ideal location of the application point (23) corresponding to the application point on a perfect package.

6. A system (1) as claimed in claim 4, c h a r a c t e r i s e d in that said reference system includes an ideal location of the application point (23) in relation to a mark (29) being fixed with respect to said package conveyor (6), said ideal location corresponding to the application point on a perfect package.

7. A system (1) as in any one of the foregoing claims, c h a r a c t e r i s e d in that said application information contains a movement pattern for said pick and place unit (36) for placing said one of said opening devices onto said one of said packages (20).

8. A system (1) as claimed in any one of the foregoing claims, c h a r a c t e r i s e d in that said optical detection unit (30) is arranged integral with said pick and place unit (36).

9. A system (1) as claimed in any one of claims 1-7, c h a r a c t e r i s e d in that said optical detection unit (30) is arranged adjacent to said package conveyor (6) at a distance from said pick and place unit (36).

10. A system (1) as claimed in any one of the foregoing claims, c h a r a c t e r i s e d in that said pick and place unit (36) comprises at least one robot (38) with at least one robot arm (39a-c).

11. A system (1) as claimed in any one of claims 1-9, c h a r a c t e r i s e d in that said pick and place unit (36) comprises at least one robot (38) with three robot arms (39a-c), said at least one robot being able to operate in three dimensions.

12. A system (1) as claimed in any one of the foregoing claims, c h a r a c t e r i s e d in that said application apparatus (13) further comprises a gluing unit (15) for applying glue onto said opening devices (2) before picking.

13. A system (1) as claimed in any one of the foregoing claims, c h a r a c t e r i s e d in that it further

comprises a supply station (12) for feeding said packages (3) to said package conveyor (6).

14. A system (1) as claimed in any one of the foregoing claims, characterised in that it further comprises a package support rail (19) for supporting said packages (3) during the application of said opening devices (2) by securing said packages between said support rail and said package conveyor (6).

15. A system (1) as claimed in claim 14, characterised in that said package support rail (19) is adjustable to permit application of opening devices (2) onto packages (3) of various sizes.

16. A system (1) as claimed in any one of the foregoing claims, characterised in that it further comprises a number of separated guiding devices (9) for guiding said packages (3), said guiding devices being fixed to and movable with said package conveyor (6) so as to feed said packages along said predetermined path (P).

17. A system (1) as claimed in claim 16, characterised in that said guiding devices (9) each comprises at least one carrier finger (10) for supporting and conveying said packages (3).

18. A system (1) as claimed in any one of the foregoing claims, characterised in that it further comprises a feeding apparatus (17) for feeding said opening devices (2) to said application apparatus (13).

19. A system (1) as claimed in claim 12, characterised in that it further comprises a feeding apparatus (17) for feeding said opening (2) devices to said gluing unit (15), whereupon said opening devices are being picked by said pick and place unit (36).

20. A method for applying opening devices (2) onto packages (3) of pourable food products, comprising the steps of feeding said packages along a predetermined path (P) by a package conveyor (6) and applying said opening devices onto said packages on said package conveyor,

characterised in that it further comprises the steps of optically detecting an application point on one of said packages (20) on said package conveyor; producing, from said optically detected application point, application information for controlling a pick and place unit (36); and picking one of said opening devices and placing it onto said one of said packages on said package conveyor by means of said pick and place unit and in accordance with said application information.

21. A method as claimed in claim 20, characterised in that said application point is defined by a prelaminated hole (21) on said one of said packages (20).

22. A method as claimed in claim 20 or 21, characterised in that it further comprises the step of recording an image of said one of said packages (20), wherein said image contains said application point.

23. A method as claimed in claim 22, characterised in that said application information is produced by comparing said image with a reference image containing a reference system, and obtaining a location of said application point with respect to said reference system.

24. A method as claimed in claim 23, characterised in that said reference system includes an ideal location of the application point (23) corresponding to the application point on a perfect package.

25. A method as claimed in claim 23, characterised in that said reference system includes an ideal location of the application point (23) in relation to a mark (29) being fixed with respect to said package conveyor (6), said ideal location corresponding to the application point on a perfect package.

26. A method as claimed in any one of claims 20-25, characterised in that said application information contains a movement pattern for said pick and place

unit (36) for placing said one of said opening devices onto said one of said packages (20).

27. A method as claimed in any one of claims 20-26, characterised in that it further comprises the step of applying glue to said opening devices (2) before picking.

28. A method as claimed in any one of claims 20-27, characterised in that it further comprises the step of feeding said packages (3) to said package conveyor (6).